HUDSON & MANHATTAN RAILROAD REPAIR SHOPS
(Hoboken Shops of the Port Authority Trans-Hudson (PATH)
Track & Structures Division)
55 Hudson Street
Hoboken
Hudson County
New Jersey

HAER No. NJ-108

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HAER NJ 9-HOBO, 11-

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HAER No. NJ-108

Location:	55 Hudson Street, Hoboken, Hudson County, New Jersey. UTM: 18.581864.4509677 U.S.G.S. Quadrangle: Jersey City, NJ, 1:24000
Date of Construction:	1907-08
Engineer/Architect:	Believed to be Charles M. Jacobs (1850-1919) Chief Engineer of the H&M Railroad Company
Present Owner:	NJ TRANSIT (New Jersey Transit) One Penn Plaza East Newark, New Jersey 07105
Last Use:	Port Authority Trans-Hudson (PATH) Car Shops
Significance:	The Hudson and Manhattan Railroad (H&M) Repair Shops are significant as the first repair and maintenance facility for the H&M and for the innovative rail car elevator lift located inside the building that allowed rail cars to be hoisted from the subway tunnel up into the shops for repairs. The H&M Shops are also significant for historical associations with the Hudson and Manhattan Railroad Company which initiated rapid transit from Manhattan to New Jersey in 1908 and for association with William Gibbs McAdoo, builder of the first trans-Hudson rapid transit tunnel.
Project Information:	This documentation was completed in January 1997 as a mitigation measure for the demolition of the H&M Shops as stipulated in the Memorandum of Agreement for the Hudson-Bergen Light Rail Transit System. Lynn Drobbin Architectural Historian Lynn Drobbin & Associates 629 Fifth Avenue Pelham, New York 10803

PHYSICAL DESCRIPTION

The Hudson & Manhattan Railroad Repair Shops (H&M Shops) are located at 55 Hudson Street in Hoboken, Hudson County, New Jersey. The building, now known as the Hoboken Shops for the Port Authority Trans-Hudson (PATH) Track & Structures Division (T&S Building), is situated on a triangular-shaped lot bounded by Hudson Street on the west, the New Jersey Transit (NJ TRANSIT) Bus Terminal on the east, the bus terminal access road on the south, and Hudson Place on the north. The H&M Shops are several hundred feet west of the NJ TRANSIT Hoboken Terminal, formerly the Erie-Lackawanna Railroad and Ferry Terminal, listed on the National Register of Historic Places. The Hudson & Manhattan Railroad Repair Shops are part of the original Hudson & Manhattan Railroad Complex at Hoboken Terminal that also includes an underground station and three original stair kiosks. The stair kiosks and the underground station remain in active use as part of the PATH system.

A parking lot and newsstand are adjacent to the north side of the building; across Hudson Place are two- to six-story commercial buildings. Trolley tracks remain in the pavement of Hudson Place. West of the building, across Hudson Street, is a parking lot. South of the bus terminal access road is the Hoboken Terminal Train Shed and the NJ TRANSIT Hoboken rail yard. A parking area is on the north side of the building; entrance kiosks to PATH, the NJ TRANSIT Bus Terminal, and the Erie-Lackawanna (Hoboken) Railroad and Ferry Terminal are east of the parking area.

The H&M Shops is located in the Southern Hoboken Historic District, an excellent example of a late nineteenth century urban neighborhood that developed as a result of the waterfront location and near-by intermodal transportation network. The district has been determined eligible for listing on the National Register. Many buildings located in the district are also individually listed on the National Register.

The H&M Shops is a three-story flat-roofed steel frame brick structure on a raised basement. The building, trapezoidal-shaped in plan, is ten bays long on the north and south facades, four bays wide on the west facade and two bays wide on the east facade. Parapet walls obscure a small rooftop stairway penthouse and roof vents; the penthouse has a standing seam metal roof and sheet metal sheathing. Exterior walls of the building are red brick laid in American bond above a corbeled brick base with a projecting soldier brick belt course. The brick cornice is defined by projecting corbeled courses of matching red brick; the parapet has terra cotta coping.

Segmental arched window openings have bluestone sills and brick voussoirs composed of three courses of rowlocks. Most of the window openings at the second story of the west facade have been modified with brick infill and brick sills to accommodate smaller replacement windows. North, south and east facades have paired windows in each bay; windows on the west facade are arranged in triplets. The south elevation has blind windows in the west bay and a pair of truncated blind windows with offset circular vent openings with brick voussoirs. Original metal blower fans are visible through the vent openings.

Few of the original six-over-six wood sash double-hung windows remain intact; many window openings have stucco or concrete block infill or have been blocked with plywood. The only visible remaining original windows are on the south facade. Anodized aluminum sash double-hung replacement windows have been installed on the north and west elevations in areas that correspond to interior offices and toilet rooms. Woven wire mesh security screens have been installed over first floor windows. Early photographs of the structure show fabric window awnings at second story windows; these have been removed. Original bluestone sills are delaminating and in deteriorated condition.

The H&M Shops has three garage bays; one large bay at the west elevation and two smaller bays at the east elevation. The garage door opening on the west facade, originally used for rail car access to the elevator, is a segmental arch articulated by a brick surround set in relief in the slightly projecting south bay. Cast iron circular wheel guards are located at the base. A manhole cover inscribed with "H&MRR" is located at the west garage entrance. The two garage bays on the east elevation have riveted built-up steel plate lintels and a steel channel center post; single-story pilasters, corbeled at the top, are at the corners. Steel overhead roll-down garage doors are at both east and west garage bay openings.

A former window opening at the third story of the south elevation has been modified with brick infill to accommodate a door. The door accesses a conveyor belt mounted on two concrete piers at the first story. The conveyor extends from the ground floor piers to a third-story landing; the landing, supported on metal brackets below the door, has an open metal grate floor and an outside rail with straight balusters. Although the conveyer is no longer in use, the original electric motor is still in place. A nameplate indicates that the conveyor was manufactured by Farquhar Conveyor Division of A. B. Farquhar & Co. of York, PA, Clifton, NJ, and Chicago, IL.

There are three pedestrian entrances; one at the first floor on the west elevation; one at the third floor of the north elevation and one at the first story on the south elevation. The ground floor entrance on the west facade, which leads to the PATH offices, is set in a recess with blue glazed bricks. The third story entrance at the north elevation, formerly a window, has been modified to accommodate a door. It is accessed by a steel fire escape with a wall-mounted pipe rail, an outside rail with straight balusters and open risers. A swinging hoisting arm is adjacent to the fire escape. The ground floor entrance at the south facade is not original; new brick has been added around the door opening. Pedestrian doors are flush steel with metal bucks.

The interior of the building consists of a large two-story repair shop space, first and second floor offices and a full third floor. The steel frame structure of the building is visible in the shop area; exposed riveted built-up plate columns and girders support heavy timber third floor beams. Steel truss members support the eastern third of the third story. Wood floor deck is visible above the timber beams.

Concrete masonry partitions separate the shops from other areas of the first and second floors. Western portions of the first and second floors contain PATH offices, toilet rooms and a stairwell. The first floor has a blacksmith shop, a two-story open work area and a two-story

storage area located in the northern portion of the building. A modern steel tube framing system with an open steel grate deck is used for the second story storage space.

The most dominant feature of the first floor is the rail car elevator shaftway. Located near the west garage entrance, the rail car elevator shaftway is separated from the main shop by a concrete block partition. The concrete-lined shaft opens to the PATH tracks approximately thirty feet below. A bank of early incandescent light sockets remains on the ceiling over the shaft; fluorescent fixtures and modern low-pressure sodium fixtures are presently in use. A modern catwalk spans the northern side of the shaftway. At the west end of the shaft is a two-story storage area enclosed at the first floor with steel grating and at the second floor with drywall partitions.

The original rail car elevator malfunctioned in 1986 and was replaced by a modern small electric hoist. Portions of the original elevator hoist mechanism are extant but have been altered. The elevator has not been replaced because the shaft is too small to be used by rail cars on the current PATH system. The hoist and shaft are presently used to transfer equipment and material for track maintenance and repair. Tracks for railroad cars extend from the shaftway to the west garage entrance; steel plates are laid between the rails.

North of the concrete block partition at the elevator shaftway is the two-story open work area. A second hoist system is installed above a rail car track in the shop area; the track extends from the east end of the building to the blacksmith shop. Original equipment such as a drill press and a rail-bending machine are recessed in the floor of the work area. The rail-bending machine is used to fabricate third rail protection board brackets and the drill press is used to fabricate brackets, braces and pipes used by the track department.

The blacksmith shop is enclosed by a concrete block partition. The original forge, bench grinder, abrasive cut-off saw, a large steel anvil and miscellaneous blacksmith tools, remain in use. A workbench is against three walls of the blacksmith shop; wall-mounted tool storage is located on the other wall.

The second floor, a partial floor at the west end of the building, contains crew supervisors' offices and toilet rooms. Second floor spaces have modern suspended acoustic tile ceilings, vinyl composition flooring, concrete masonry and plywood partition walls and modernized toilet facilities.

The third floor has locker rooms, a toilet room, a machine room for the car elevator and storage. The western portion of the third floor contains crew locker and toilet facilities. Crew spaces have modern finishes such as suspended acoustic tile ceilings, vinyl composition flooring and concrete masonry and plywood partition walls. Storage areas are located in the eastern portion of the third floor; these were not accessible during site visits. A machine room for the original car elevator hoist pulley mechanism is also on the third floor; the nameplate for the original hoist manufacturer, the Cecil McLauthlin Company of Boston, is visible on the remaining machinery.

HISTORY OF THE H&M SHOPS

The Hudson and Manhattan Railroad (H&M) Repair Shops are significant as the initial repair shops of the H&M Railroad Company and as the former site of the original car elevator which lowered the first rail cars down into the H&M tunnels. The H&M Railroad Repair Shops are also significant for its historical associations with the completion of the first Manhattan to New Jersey rapid transit tunnel and as one of the first structures built by the H&M Railroad Company, builders of one of the only subway systems in New Jersey. The H&M Railroad rapid transit system remains intact and is operated by the Port Authority Trans-Hudson (PATH).

The Hudson and Manhattan Railroad (H&M) Repair Shops were constructed in 1908 by the Hudson Companies, a subsidiary of the H&M Railroad Company organized in 1905 to manage their real estate properties. The H&M Repair Shops were believed to have been designed by Charles M. Jacobs (1850-1919), Chief Engineer of the H&M Railroad Company during its early years of operation. Jacobs, an expert on the design and engineering of railway tunnels, also designed the tunnels and terminals of the H&M Railroad Company. The most significant feature of the H&M Repair Shops was the rail car elevator constructed in 1907 above Track Three of the H&M Hoboken Terminal Station, about one year prior to the construction of the H&M Repair Shops building. The massive car elevator, cited as one of the largest elevators of its type in terms of size and lifting capacity, lowered the first rail cars into the H&M Tunnels. The elevator was used for rail car access to the tunnel to repair and service H&M Rail Cars until 1911 when the H&M constructed the Henderson Street Shops in Jersey City.

The land at Hudson Street and Hudson Place was first leased in 1904 to the H&M Railroad Company from the Jersey City, Hoboken and Paterson Street Railway Company and the Public Service Corporation of New Jersey. This land was part of the Public Service right-of-way whose trolley tracks to the Delaware, Lackawanna & Western Hoboken Terminal were located only several feet south. In 1906 this lease was modified to allow the H&M to construct an "undersurface terminal beneath the lands of Public Service at the Hoboken Terminal, certain stairs, ramps and entrances" and "a portion of the lands of Public Service on the easterly side of Hudson Street with a frontage of 50 feet and a depth of 100 feet adjoining lands of the Lackawanna Railroad".

The modified lease included a rectangular area where a 30 foot shaft was constructed by the H&M to accommodate a large car elevator to provide vertical transport for the H&M rail cars from the tunnel below. The elevator was designed, built and installed by the Cecil McLauthlin Company, 20 Fulton Street, Boston, Massachusetts, under the designs of Martin B. McLauthlin patented February 6, 1884, and March 18, 1899. The McLauthlin Company had installed a considerable number of railroad car elevators in New York and at other locations. The December 28, 1907, issue of the *Street Railway Journal* described the elevator as "the largest elevator in size and lifting capacity that has been constructed." The elevator had a 50' x 12' elevator platform with 100,000 lbs. lifting capacity that was in addition to the 32,000 pounds weight of

the elevator platform. The elevator was suspended by forty three-quarter-inch steel cables of a combined strength of 1,522,000 lbs. and had 63,800 lbs. counterweights.

Provisions for the elevator were made by constructing a wellway with reinforced concrete walls from the ground level to the tunnel. Six steel columns that rested on the side walls of this structure supported steel girders directly over the hoistway; the machine operating the elevator platform was placed over these girders. The elevator, with an electric pilot switch operated by a hand shipping cable, could run at speeds of 10 to 20 feet per minute with the platform stopping automatically at the track levels. The elevator platform was equipped with a third rail that was active only when the platform was at track level.

Prior to the initiation of service on the H&M Railroad, the elevator was used to transport rails, ballast and other tunnel equipment material. The most significant use of the elevator was to deliver all the H&M's new rolling stock to the tunnel in 1908. The electrically-powered passenger cars were 48 feet long and 9 feet wide, weighed 64,000 lbs. when empty and 85,000 lbs. when loaded with passengers. The elevator was used to change motors under the car bodies and also permitted the shop force to bring work cars up from the tracks for loading and unloading of equipment and materials for maintenance work. The elevator was used for the repair of rolling stock until 1911, when the H&M Railroad was extended to Newark and car repair work was transferred to a new shop on Henderson Street in Jersey City (demolished 1994).

The H&M Railroad Repair Shops building was constructed in 1908 by the H&M real estate subsidiary - the Hudson Companies - and included the enclosure of the exterior elevator and shaft. The H&M Railroad Company leased most of the building from the Public Service Corporation, the owner of the land. The lease, for a term of 999 years, included the entire first floor, a portion of the second floor, the car elevator and an exterior overhead access door on Hudson Place. The new three-story brick building provided storage and shop areas in connection with maintenance of the H&M Railroad Company's right-of-way including tracks, ties, ballast and related equipment. The first floor contained a large blacksmith shop and machinery related to the rail repair and other equipment. The second floor of the building was used by the Public Service Railway Company for its School of Instruction with a large space leased by the H&M for storage and lockers for their employees.

The Hudson and Manhattan Railroad initiated rapid rail transit between New York and New Jersey in 1908. The opening of the new underground rail line, connected to Manhattan by a tunnel under the Hudson River, was the culmination of 34 years of intermittent effort and toil. Efforts to construct a rail tunnel under the Hudson River began in 1873 with the founding of the Hudson Tunnel Railroad Company by former Union Army Colonel DeWitt Clinton Haskin. Delayed by litigation in 1874, the project was later resumed but ultimately resulted in failure following a tragic accident in 1880.

The second effort to construct a trans-Hudson tunnel was begun in 1888 by the Hudson River Tunnel Company which was financed with British capital and led by an English contractor, S. Pearson and Sons. In comparison to the previous attempts, the efficiency and safety of this

operation was greatly improved due to the use of a British invention called the Greathead Shield. Commonly known as the mechanical mole, this device was successfully used to construct the London Tower Subway. However, financial difficulties forced this effort to a halt.

No further attempts to construct a trans-Hudson tunnel were made until 1902 when attorney William Gibbs McAdoo (1863-1941) became interested in the twice-failed tunnel project. McAdoo obtained financing for completion of the tunnel and founded the Hudson and Manhattan Railroad Company. Efforts of McAdoo's predecessors were not for naught; the original brick tunnel of the Haskin effort, evaluated as sound, was retained and completed, and Pearson's abandoned and rusted Greathead shield, declared in good mechanical order, was used to complete the tunnel boring.

On February 25, 1908, a nine-car inaugural train and a telegraphed message from Theodore Roosevelt marked the formal opening of the Hudson and Manhattan Railroad. The journey, which lasted ten-and-a-half minutes and extended 6.2 miles, began at Nineteenth Street and Sixth Avenue in Manhattan and terminated in Hoboken where a crowd of ten thousand people gathered to greet the first train. In the first 24 hours of operation over 50,000 people rode the line. *The New York Times* cited the event as "one of the greatest engineering feats ever accomplished, greater perhaps than the Panama Canal will be when opened, considering the obstacles which had to be overcome".

William McAdoo later became a significant political figure serving as President Wilson's Secretary of the Treasury where he was instrumental in the establishment of the Federal Reserve System. McAdoo was named Director General of American Railroads when they were placed under government control during World War I. He had two unsuccessful bids for the Democratic nomination for the United States (U.S.) Presidency in 1920 and 1924. Undaunted at age 70, he served as U.S. Senator representing the State of California from 1933-1939.

In 1909, another agreement was made between the Public Service Corporation and the H&M Railroad Company. This agreement provided for the construction of the new Public Service Hoboken Trolley Terminal, modified stairway locations and escalators. The trolley tracks alongside the H&M Repair Shops were to be elevated and terminate in a large two-story Terminal which was completed in 1910.

The H&M Railroad was a huge success and by 1910, four new stations and several miles of new track and new tunnels had been added to the system. The H&M decided to construct a new, larger yard and shops in a less constricted site than the original Hoboken Shops. A site in Jersey City at Henderson and Steuben Streets was chosen and on November 10, 1910, the Henderson Street Yard and Shops were formally opened. The facility, which contained a large storage yard and maintenance shops that accommodated 119 cars, was a state-of-the-art rail shop facility with an inspection shed, paint shop and repair and machine shops. In the *Electric Railway Journal* of 1911, the Chief Engineer of the H&M wrote "how absolutely essential it is in the operation of any such tunnel railroad as this to have the inspection and maintenance of cars executed in the open where there is plenty of natural light".

The H&M Railroad was extended to 33rd Street in Manhattan, to Jersey City and Newark and by 1913 about 7.25 route miles in New York, eleven miles in New Jersey and 190 rail cars were included in the system.

Although most of the rail vehicle repair and maintenance functions had been transferred to the Henderson Street Shops, the H&M Repair Shops at Hoboken continued to be used by the H&M for shop purposes and light storage. Eventually, portions of the building were leased to several different manufacturing concerns. From 1945-1949, the third floor was leased to the Vanda Tool & Instrument Company as a machine and assembly shop. At that time, the southeast window on the south facade was converted into a doorway that, as indicated by historic photographs, was linked by a pedestrian bridge to the walkway to the Public Service Trolley Terminal.

In 1949, the Public Service Trolley Terminal was demolished and replaced with a bus shelter. In 1954, the H&M entered into receivership. To assume responsibility for the operation of the H&M Railroad, the Port Authority Trans-Hudson Corporation (PATH) was formed in 1962 as a subsidiary of the Port Authority of New York and New Jersey.

From 1960-61, the third floor was leased to the Lifetime Eastern Company and from 1964-1966, the third floor was used for storage of shoes or shoe manufacture. The plans attached to the lease noted that the elevator lift was in operation and that several improvements were made to the building and the elevator at this time. In 1967, abandonment of ferry service from both the Erie-Lackawanna (former Delaware, Lackawanna & Western) and the CNJ (Central Railroad of New Jersey) Jersey City Railroad and Ferry Terminals greatly increased the importance of the H&M as a principal trans-Hudson passenger link to Manhattan. The original car elevator remained in use by PATH until 1985 when the limit switch malfunctioned, the cables broke and the counterweights sank to the bottom of the shaft.

Currently, the PATH system operates service over fourteen miles of track through four trans-Hudson tunnels to two Manhattan destinations, Thirty-third Street and the World Trade Center. An estimate of fifty-five million passengers use the PATH system annually. The Hudson & Manhattan Railroad Repair Shops are currently used by PATH as a shop facility and for offices and locker rooms for PATH employees. The original elevator has been replaced with a hoist used by PATH to transport materials into the PATH tunnel. The H&M Repair Shops building is currently owned by New Jersey Transit (NJ TRANSIT), a state-wide mass transportation operating system that inherited the facilities of the Public Service Railway Company, the original owners of the building.

Despite its brief role as the only repair and maintenance facility of the Hudson and Manhattan Railroad Company, the H&M Railroad Repair Shops are significant as the original repair shops of the H&M and as the location of the car elevator that provided service for the early years of the railroads' operation. The H&M Railroad Repair Shops are also significant for its historical associations with the H&M Railroad, the construction of the first Hudson River rapid transit tunnel from New Jersey to New York and with William Gibbs McAdoo, founder of the H&M Railroad Company.

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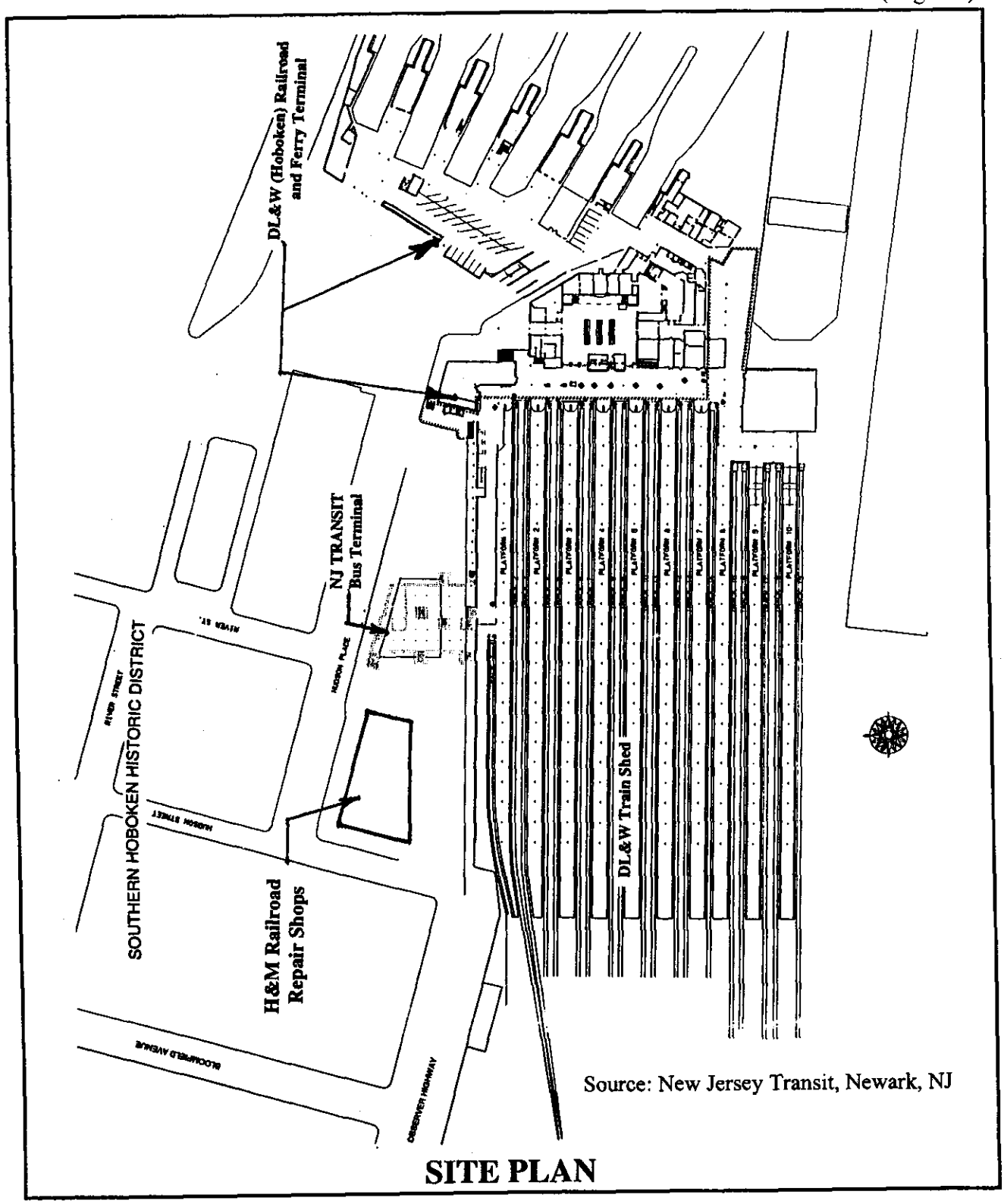
DL&W (Hoboken) Railroad and Ferry Terminal
NJ TRANSIT Bus Terminal
SOUTHERN HOBOKEN HISTORIC DISTRICT
H&M Railroad Repair Shops
DL&W Train Shed
RIVER STREET
HUDSON PLACE
HUDSON STREET
BLOOMFIELD AVENUE
OBSERVER HIGHWAY
Source: New Jersey Transit, Newark, NJ

SITE PLAN